

**REMARKS**

In the Office Action<sup>1</sup>, the Examiner took the following actions:

objected to the specification;

objected to claims 2, 3, 6, 9, 10, 11, 14, 15, 20, 21, 24, 27, and 28 because of minor informalities;

rejected claims 1-31 under 35 U.S.C. § 101;

rejected claims 7, 12, 18, and 28 under 35 U.S.C. § 112, second paragraph;

rejected claims 1, 3, and 7 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,889,686 ("Mimotogi") in view of U.S. Patent No. 6,221,563 ("Hryhorenko");

rejected claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Hryhorenko and further in view of U.S. Patent No. 6,280,887 ("Lu");

rejected claims 4-6 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Hryhorenko and further in view of U.S. Patent No. 6,319,648 ("Reiser");

rejected claims 8 and 10-12 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser;

rejected claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser and further in view of Lu;

rejected claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser;

rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser and further in view of Lu;

rejected claims 19 and 21-24 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser;

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<sup>1</sup> The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Office Action.

rejected claim 20 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser and further in view of Lu;

rejected claim 25-28 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser; and

rejected claims 29-32 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6225,011 ("Gotoh") in view of Reiser and further in view of Mimotogi.

Claim 4 is canceled, without prejudice or disclaimer, and claims 1-3 and 5-32 remain under examination. Applicants respectfully traverse the above-listed objections and rejections in light of the remarks which follow.

***Preliminary Matters***

As a preliminary matter, Applicants respectfully traverse the Examiner's assertion that the IDS filed August 12, 2004, listing the Nakamura reference, fails to comply with the provisions of 37 C.F.R. §§ 1.97, 1.98 and M.P.E.P. § 609. Office Action at 2. The Examiner contends that because the Nakamura reference is a foreign language document and because no English-language translation of the reference was provided with the document, the IDS fails to meet the standards set forth in the above listed C.F.R. and M.P.E.P. sections. This is incorrect.

There is no requirement that an English-language translation of a non-English language reference be provided.

Information which complies with requirements as discussed in this section but which is in a non-English language will be considered in view of the concise explanation submitted . . . and insofar as it is understood on its face; e.g., drawings, chemical formulas, in the same manner that non-English language information in Office search files is considered by examiners in conducting searches. The examiner need not have the information translated unless it appears necessary to do so . . . . The examiner should not require that a translation be filed by applicant. . . . The duty at issue . . . is the duty of candor, not a duty of translation. The duty of candor does not require that the applicant translate every foreign reference, but only that the applicant refrain from submitting

partial translations and concise explanations that it knows will misdirect the examiner's attention from the reference's relevant teaching.

Semiconductor Energy Lab. Co., Ltd. v. Samsung Electronics Co., 204 F.3d 1368, 1377-78 (Fed. Cir. 2000). See also M.P.E.P. § 609.05(b).

For a non-English language reference to meet the requirements under 37 C.F.R. §§ 1.97, 1.98 and be considered by the Examiner, “[e]ach information disclosure statement must . . . include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information listed that is not in the English language. . . . The explanation required is limited to the relevance as understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information at the time the information is submitted to the Office.” M.P.E.P. § 609.04(a)(III). 37 CFR § 1.98(3)(ii) only requires that “[a] copy of the translation if a written English-language translation of a non-English-language document, or portion thereof, is within the possession, custody, or control of, or is readily available to any individual designated in § 1.56(c)” (emphasis added).

Here, Applicants have provided a concise statement for the non-English Nakamura reference and the IDS listing Nakamura meets the other requirements under 37 C.F.R. §§ 1.97, 1.98 and M.P.E.P. § 609. Regardless of whether or not the cited documents constitute prior art, “once the minimum requirements of 37 C.F.R. 1.97 and 37 C.F.R. 1.98 are met, the Examiner has an obligation to consider the information.” *See* M.P.E.P. § 609. Since Applicants have met the requirements of 37 C.F.R. §§ 1.97 and 1.98, Applicants respectfully submit that the Examiner should consider the cited documents. Accordingly, Applicants respectfully request that the

Examiner reconsider and indicate his consideration of the Nakamura reference on the attached PTO Form 1449.

***Applicants' Amendments***

Applicants have amended the specification. In particular, Applicants have amended the title of this application in a manner consistent with the Examiner's comments at page 2 of the Office Action. Accordingly, Applicants deem the Examiner's objection addressed and respectfully request that the Examiner withdraw the objection to the title. Applicants have also amended the specification, as indicated above, to correct typographical errors within the specification in Equations (6), (12), (14), and (16). The exponent portion of these equations is amended to disclose " $\exp[-\{(x-x')^2+(y-y')^2\}/k^2]$ " (emphasis added) in Equation (6), with similar amendments to Equations (12), (14), and (16). Claim (14) is also amended to correct a typographical and now discloses " $\exp[-\{(\alpha-x')^2+(\beta-y')^2\}/k^2]$ " (emphasis added).

Applicants have amended claims 1-3 and 5-32. Claim 4 is canceled. Applicants respectfully request the requisite fee payment for the amendments, as indicated in the attached Transmittal Letter, be drawn from Deposit Account 06-0916.

Support for the amendments to the claims listed below can be found, for example, at the corresponding portions of Applicants' specification also listed below.

claims 1, 8, 16, 22, 25, 26, 29, and 30 – page 17, lines 1-10;

claims 13, 19, 27, 28, 31, and 32, as well as additional support for the amendments to claims 1, 8, 25, 26, 29, and 30 – page 28, lines 4-17;

claims 5, 17, and 23, and additional support for the amendments to claims 8, 26, and 30 – page 48, lines 16-25;

claims 6, 11, and 24, and additional support for the amendments to claims 13, 27, and 31 – page 49, lines 18-19; and

claims 7, 12, and 18, as well as additional support for the amendments to claims 19, 28, and 32 – page 54, lines 18-21, and in Fig. 13.

Additional support can also be found for the amendments to the claim listed below, for example, at the corresponding identified portions of Applicants' specification listed below:

claims 1, 25, and 29 – page 28, lines 24-26, and page 29, lines 1-2;

claims 1, 8, 13, 19, 25, 26, 27, and 28 – page 27, lines 11-13;

claims 5, 8, 17, 23, 26, and 30 – page 49, line 1;

claim 25-28 – page 27, lines 1-22; and

claims 29-32 – page 60, lines 11-14.

Applicants have also amended claims 2, 3, 6, 9, 10, 11, 14, 15, 20, 21, 24, 27, and 28 in response to the Examiner's comments at page 3 to improve the form of these claims and to correct minor grammatical errors. In light of these amendments, Applicants respectfully request that the Examiner reconsider and withdraw the objection to claims 2, 3, 6, 9, 10, 11, 14, 15, 20, 21, 24, 27, and 28.

***Regarding the claim rejection under 35 U.S.C. § 101***

Applicants respectfully traverse the rejection of claims 1-31 under 35 U.S.C. § 101. In order to advance prosecution, however, Applicants have amended independent claims 1, 8, 13, 19, and 29-32 to recite "preparing an actual dissolution rate of a photosensitive resist developed by a developer, the actual dissolution rate being measured outside a computer." Applicants have also amended claim 1 to recite "storing the predicted pattern shape in a memory." Claims 8, 13, 19, and 29-32 are amended in a similar manner as claim 1 in this regard.

In addition, the Examiner contends that claims 25-28 are "directed towards functional descriptive material . . . which is non-statutory." Office Action at 4. Applicants have amended claim 25-28 in a manner consistent with the Examiner's comments. For example, claim 25 is

amended to recite “a medium readable by the computer system; instructions recorded on the recording medium . . . .,” with similar amendments to claims 26-28.

Accordingly, Applicants deem the rejection of claims 1-31 under 35 U.S.C. § 101 addressed and respectfully request that the Examiner withdraw the rejection.

***Regarding the claim rejection under 35 U.S.C. § 112, second paragraph***

Applicants respectfully traverse the rejection of claims 7, 12, 18, and 28 under 35 U.S.C. § 112, second paragraph. In order to advance prosecution, however, Applicants have amended the claims in a manner consistent with the Examiner’s comments at pages 4-5 of the Office Action. For example, claim 7 is amended to recite “the spatial average value is calculated in reference positions of the photosensitive resist when the developer flows on the photosensitive resist, the reference positions being located upstream of the position where the pattern shape of the photosensitive resist is predicted” (emphasis added). Claims 12, 18, and 28 are amended in a similar manner. Accordingly, Applicants deem the rejection of claims 7, 12, 18, and 28 under 35 U.S.C. § 112, second paragraph, addressed and respectfully request that the Examiner withdraw the rejection.

***Regarding the claim rejections under 35 U.S.C. § 103(a)***

Applicants respectfully traverse the rejection of claims 1, 3, and 7 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Hryhorenko because no *prima facie* case of obviousness is established based on the combination of the references.

To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See M.P.E.P. § 2142, 8th Ed., Rev. 5 (August 2006). Moreover, “in formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of

ordinary skill in the art would have combined the prior art elements in the manner claimed.”

USPTO Memorandum from Margaret A. Focarino, Deputy Commissioner for Patent Operations,  
May 3, 2007, page 2.

Claim 1 recites, *inter alia*:

preparing an actual dissolution rate of a photosensitive resist  
developed by a developer, the actual dissolution rate being  
measured outside a computer; . . .

calculating a changing ratio of the measured dissolution rate  
relating to an alkaline concentration of the developer, depending  
on at least one of exposure dose on the photosensitive resist, a  
position in a thickness direction of the photosensitive resist and the  
alkaline concentration of the developer . . .

wherein the changing ratio is calculated from a logarithm of the  
measured dissolution rate to the alkaline concentration . . . .

Emphasis added. The combination of Mimotogi and Hryhorenko fail to teach at least these  
elements recited in claim 1.

Mimotogi teaches, at col. 9, lines 24-38, that  $\gamma$  is a constant. To the extent that the  $\gamma$   
taught by Mimotogi corresponds to the claimed “changing ratio,” the reference does not teach or  
suggest “calculating a changing ratio of the measured dissolution rate relating to an alkaline  
concentration of the developer depending on at least one of exposure dose on the photosensitive  
resist, a position in a thickness direction of the photosensitive resist and the alkaline  
concentration of the developer [and] . . . wherein the changing ratio is calculated from a  
logarithm of the measured dissolution rate to the alkaline concentration,” (emphasis added) as  
recited in claim 1.

Hryhorenko also fails to teach or suggest this element of claim 1. Hryhorenko merely  
discloses that “[t]he dissolution rate of the exposed portion . . . of the layer is significantly higher  
than the dissolution rate of the unexposed portion of the layer during the developing step.” See

Col. 6, lines 39-43. Hryhorenko, however, also fails to teach or suggest the claimed “calculating a changing ratio of the measured dissolution rate relating to an alkaline concentration of the developer depending on at least one of exposure dose on the photosensitive resist, a position in a thickness direction of the photosensitive resist and the alkaline concentration of the developer [and] . . . wherein the changing ratio is calculated from a logarithm of the measured dissolution rate to the alkaline concentration,” as recited in claim 1.

No *prima facie* case of obviousness is established with respect to claim 1 based on Mimotogi and Hryhorenko, because the references, either alone or in combination, fail to teach or suggest each and every element recited in claim 1. Claims 3 and 7 depend from claim 1 and are allowable at least due to their dependence. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 1, 3, and 7 under 35 U.S.C. § 103(a).

Applicants respectfully traverse the rejection of claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Hryhorenko and further in view Lu. Claim 2 depends from claim 1 and, thus, incorporates each and every element recited in claim 1. Mimotogi and Hryhorenko fail to teach or suggest the claimed “calculating a changing ratio . . .,” as recited in claim 1, for the reasons discussed above. Lu discloses a method of “optical proximity correction . . . using a complementary mask and exchange design methodology” (col. 1, lines 11-13) but fails to teach or suggest “calculating a changing ratio . . .,” as recited in claim 1, and required by claim 2.

Accordingly, no *prima facie* case of obviousness is established with respect to claim 1 based on Mimotogi, Hryhorenko, and Lu, because the references, either alone or in combination, fail to teach or suggest each and every element recited in claim 1. Claim 2 is allowable at least



due to its dependence from independent claim 1. Thus, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 2 under 35 U.S.C. § 103(a).

Applicants respectfully traverse the rejection of claims 4-6 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Hryhorenko and further in view of Reiser because no *prima facie* case of obviousness is established based on the combination of the references.

Claim 4 is canceled rendering its rejection moot. Claim 6 depends from claim 1 and, accordingly, incorporates each and every element recited in independent claim 1. No *prima facie* case of obviousness is established with respect to claim 1 based on Mimotogi and Hryhorenko, because the references, either alone or in combination, fail to teach or suggest each and every element recited in claim 1. Independent claim 5, although of a different scope, includes recitations similar to claim 1.

Reiser discloses, for example, in Figs. 1-4, plots of the logarithm of the dissolution rate versus the concentration of the dissolution inhibitor (col. 4, lines 40-67) and versus the concentration of the dissolution accelerator (col. 5, lines 1-9). Applicants advise the Examiner that the dissolution inhibitor and dissolution accelerator are contained in the resist, but not contained in the developer. Reiser, thus, fails to teach or suggest “calculating a changing ratio of the measured dissolution rate relating to an alkaline concentration of the developer,” (emphasis added) as recited by claim 1 and required by claim 6 or “calculating a changing ratio of the measured dissolution rate relating to an alkaline concentration of the developer, depending on at least one of exposure dose on the photosensitive resist, a position in a thickness direction of the photosensitive resist and the alkaline concentration of the developer,” (emphasis added) as recited in claim 5.

Reiser fails to cure the deficiencies of Mimotogi and Hryhorenko because the combination of the references fail to teach or suggest “calculating a changing ratio . . .,” as recited in claim 1, and required by claim 6 or “calculating a changing ratio . . .,” as recited in claim 5. For the above discussed reasons, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 4-6 under 35 U.S.C. § 103(a).

In addition to the above reasons, no *prima facie* case of obviousness is established with respect to claims 5 and 6 because there is no motivation to combine the references in the Examiner’s proposed manner. The concentrations of the dissolution inhibitor or accelerator is substantially different from the alkaline concentration. For example, Reiser teaches the dissolution inhibitor, such as the diazoquinone derivatives, PAC, and DNQ, included in the resin, reduces the rate of dissolution (col. 1 lines 48-65; col. 2 lines 1-11). Reiser also discloses the dissolution accelerator, such as the dihydroxy compound, included in the resist accelerates the dissolution of the resist (col. 5 lines 6-7, Fig. 4). Reiser, however, only teaches using the dissolution inhibitor and dissolution accelerator to change the characteristic of the resist (col. 5, lines 14-46). Therefore, there is no motivation in Reiser to calculate the changing ratio of the logarithm of the measured dissolution rate to the alkaline concentration to improve the precision of the development profile simulation. Thus, claims 5 and 6 are allowable over the Examiner’s proposed combination of Mimotogi, Hryhorenko, and Reiser for this additional reason.

Applicants respectfully traverse the rejection of claims 8 and 10-12 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser because no *prima facie* case of obviousness is established based on the references.

Claim 8 recites, *inter alia*:

preparing an actual dissolution rate of a photosensitive resist developed by a developer, the actual dissolution rate being measured outside a computer . . .

calculating a changing ratio of a logarithm of the measured dissolution rate to an alkaline concentration of the developer or the changing ratio of the logarithm of the measured dissolution rate to a logarithm of the alkaline concentration of the developer (emphasis added).

Mimotogi is limited to teachings related to a “profile simulation method” (see e.g., col. 9, lines 39-40) and, thus, cannot teach “preparing an actual dissolution rate . . . [and] calculating a changing ratio,” as recited in claim 8. As discussed above, the teachings of Reiser are limited to dissolution inhibitor and dissolution accelerator concentrations of a resist, but not a developer. Thus, Reiser also cannot teach “preparing an actual dissolution rate of a photosensitive resist developed by a developer. . . [and] calculating a changing ratio,” (emphasis added) as recited in claim 8. In addition, there is no motivation to combine the teachings of Mimotogi and Reiser for the reasons discussed above regarding claims 5 and 6.

Accordingly, no *prima facie* case of obviousness is established with respect to claim 8 based on Mimotogi and Reiser, because the references, either alone or in combination, fail to teach or suggest each and every element recited in claim 8 and because there is no motivation to combine the references in the Examiner’s proposed manner. Claims 10-12 depend from claim 8 and are allowable over the combination of Mimotogi and Reiser at least due to their dependence. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 8 and 10-12 under 35 U.S.C. § 103(a).

Applicants respectfully traverse the rejections of claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser and further in view of Lu because no *prima facie* case of obviousness is established based on the references. Claim 9 depends from claim 8

and, thus, incorporates each and every element recited in claim 1. Mimotogi and Reiser fail to teach or suggest the claimed “preparing an actual dissolution rate of a photosensitive resist developed by a developer. . . [and] calculating a changing ratio,” as recited in claim 8, for the reasons discussed above. Lu, also discussed above, fails to teach or suggest “preparing an actual dissolution rate of a photosensitive resist developed by a developer. . . [and] calculating a changing ratio,” as recited in claim 8, and required by claim 9.

No *prima facie* case of obviousness is established with respect to claim 8 based on the combination of Mimotogi, Reiser, and Lu. Claim 9 is allowable over the combination of the references at least for the same reasons as claim 8. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 9.

Applicants respectfully traverse the rejection of claims 13 and 15-18 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser. No *prima facie* case of obviousness is established based on the combination of the references.

Claim 13 recites, *inter alia*:

preparing an actual dissolution rate of a photosensitive resist developed by a developer, the actual dissolution rate being measured outside a computer; . . .

calculating a spatial average value of the optical intensities in a part of a whole exposed area where the photosensitive resist is exposed in a certain amount or more and dissolves in an initial stage of development;

calculating a changing ratio of the measured dissolution rate relating to an alkaline concentration of the developer.

As already discussed above, Mimotogi is limited to teachings related to a “profile simulation method” (see *e.g.*, col. 9, lines 39-40) and does not teach “preparing an actual dissolution rate,” as recited in claim 13. Accordingly, Mimotogi cannot teach “calculating a

changing ratio of the measured dissolution rate relating to an alkaline concentration of the developer,” also recited by claim 13. The teachings of Reiser are limited to dissolution inhibitor and dissolution accelerator concentrations of a resist, but not a developer for the reasons already discussed above. Accordingly, Reiser cannot teach “preparing an actual dissolution rate of a photosensitive resist developed by a developer, the actual dissolution rate being measured outside a computer. . . [and] calculating a changing ratio of the measured dissolution rate relating to an alkaline concentration of the developer,” (emphasis added) as recited in claim 13.

No *prima facie* case of obviousness is established with respect to claim 13 because Mimotogi and Reiser fail to teach or suggest each and every element recited in claim 13. Claims 15-18 depend from claim 13 and are allowable over Mimotogi and Reiser at least due to their dependence from independent claim 13. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 13 and 15-18 under 35 U.S.C. § 103(a).

Applicants respectfully traverse the rejection of claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser and further in view of Lu. Lu fails to cure the deficiencies of Mimotogi and Reiser with respect to claim 13, from which claim 14 depends for reasons already discussed above with respect to claim 2. The combination of Mimotogi, Reiser, and Lu fails to teach or suggest “preparing an actual dissolution rate of a photosensitive resist developed by a developer, the actual dissolution rate being measured outside a computer. . . [and] calculating a changing ratio of the measured dissolution rate relating to an alkaline concentration of the developer,” as recited in claim 13, and required by claim 14. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 14 under 35 U.S.C. § 103(a).

Applicants respectfully traverse the rejection of claims 19 and 21-24 under 35 U.S.C.

§ 103(a) as being unpatentable over Mimotogi in view of Reiser. Claim 19 recites, *inter alia*:

preparing an actual dissolution rate of a photosensitive resist developed by a developer, the actual dissolution rate being measured outside a computer;

calculating optical intensities in a target position to predict a pattern shape of the photosensitive resist and in reference positions of the photosensitive resist, the reference positions being located upstream of the target position when the developer flows on the photosensitive resist;

calculating spatial average values of the optical intensities in the reference positions;

calculating a changing ratio of the measured dissolution rate relating to an alkaline concentration of the developer;

obtaining calculated dissolution rates by using the spatial average values in the reference positions and the changing ratio . . . .

Mimotogi discloses that “the desired dimensions of (at least two) regions-of-interest are set at  $w_0(w_{01}, w_{02})$ ” (col. 11, lines 1-2) and that “the optical image distribution  $I(x, y, z)$  within the resist are calculated and averaged in the film thickness direction” (col. 11, lines 5-8).

Mimotogi, however, fails to teach or suggest “calculating optical intensities in a target position to predict a pattern shape of the photosensitive resist and in reference positions of the photosensitive resist, the reference positions being located upstream of the target position when the developer flows on the photosensitive resist,” (emphasis added) and accordingly also cannot teach “calculating spatial average values . . . in the reference positions and . . . obtaining calculated dissolution rates by using the spatial average values in the reference positions,” (emphasis added) as recited in claim 19. As discussed above, the teachings of Reiser are limited to dissolution inhibitor and dissolution accelerator concentrations of a resist, but not a developer. Accordingly, Reiser also fails to teach the claimed “calculating a changing ratio of the measured

dissolution rate relating to an alkaline concentration of the developer; obtaining calculated dissolution rates by using the spatial average values in the reference positions and the changing ratio,” (emphasis added) as recited in claim 19.

No *prima facie* case of obviousness is established with respect to claim 19 based on Mimotogi and Reiser, because the references, either alone or in combination, fail to teach or suggest each and every element recited in claim 19. Claims 21-24 depend from claim 19 and are allowable over the combination of Mimotogi and Reiser at least due to their dependence. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 19 and 21-24 under 35 U.S.C. § 103(a).

Applicants respectfully traverse the rejection of claim 20 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser and further in view of Lu because no *prima facie* case of obviousness is established based on the references. Claim 20 depends from claim 19 and, thus, incorporates each and every element recited in claim 19. Mimotogi and Reiser fail to teach or suggest the claimed “calculating optical intensities in a target position . . .” and “calculating a changing ratio of the measured dissolution rate relating to an alkaline concentration of the developer” and the combination of the references cannot teach “obtaining calculated dissolution rates by using the spatial average values in the reference positions and the changing ratio,” as recited in claim 19, for the reasons discussed above. Lu, for reasons already discussed above, also fails to teach or suggest “obtaining calculated dissolution rates . . .,” as recited in claim 19, and required by claim 20.

No *prima facie* case of obviousness is established with respect to claim 19 based on the combination of Mimotogi, Reiser, and Lu. Claim 20 is allowable over the combination of the

references at least due to its dependence from claim 19. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 20.

Applicants respectfully traverse the rejection of claim 25-28 under 35 U.S.C. § 103(a) as being unpatentable over Mimotogi in view of Reiser. Claims 25-28, although of different scope, recites similar elements as claims 1, 8, 13, and 19, respectively. No *prima facie* case of obviousness is established with respect to claims 25-28 based on Mimotogi and Reiser for similar reasons as discussed above regarding claims 1, 8, 13, and 19, respectively. Accordingly, Applicants respectfully that the Examiner reconsider and withdraw the rejections of claims 25-28.

Applicants respectfully traverse the rejections of claims 29-32 under 35 U.S.C. § 103(a) as being unpatentable over Gotoh in view of Reiser and further in view of Mimotogi. Claims 29-32, although of different scope, recites similar elements as claims 1, 8, 13, and 19.

Gotoh merely discloses a method for improving alignment accuracy in patterns formed “among [ ] respective pattern exposure systems.” Col. 1, lines 13-14. The Examiner acknowledges at page 33 of the Office Action that Gotoh fails to teach the “a measured changing ratio of a dissolution rate of the photosensitive resist relating to an alkaline concentration changed by at least one of exposure dose on the photosensitive resist.”

Gotoh fails to teach or suggest the “changing ratio” recited in claims 29-32. Reiser and Mimotogi also fail to teach or suggest the claimed “changing ratio” or its associated elements recited in claims 29-32 for similar reasons as those discussed above regarding claims 1, 8, 13, and 19. No *prima facie* case of obviousness is established with respect to claims 29-32 based on Gotoh, Reiser, and Mimotogi, because the references, either alone or in combination, fail to teach or suggest each and every element recited in claims 29-32. Accordingly, Applicants



respectfully request that the Examiner reconsider and withdraw the rejection of claims 29-32 under 35 U.S.C. § 103(a).

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,  
GARRETT & DUNNER, L.L.P.

Dated: May 21, 2007

By: Richard V. Burgujian Reg. No. 53,232  
for Richard V. Burgujian  
Reg. No. 31,744

**Attachments** to this paper include a copy of a PTO Form 1449 included with an Information Disclosure Statement (IDS) submitted August 12, 2004.